NASA'S MISSION TO PLANET EARTH

EARTH PROBES

DATA INFORMATION SYSTEM

EOS

EARTH OBSERVING SYSTEM

Transition To B - Status Report

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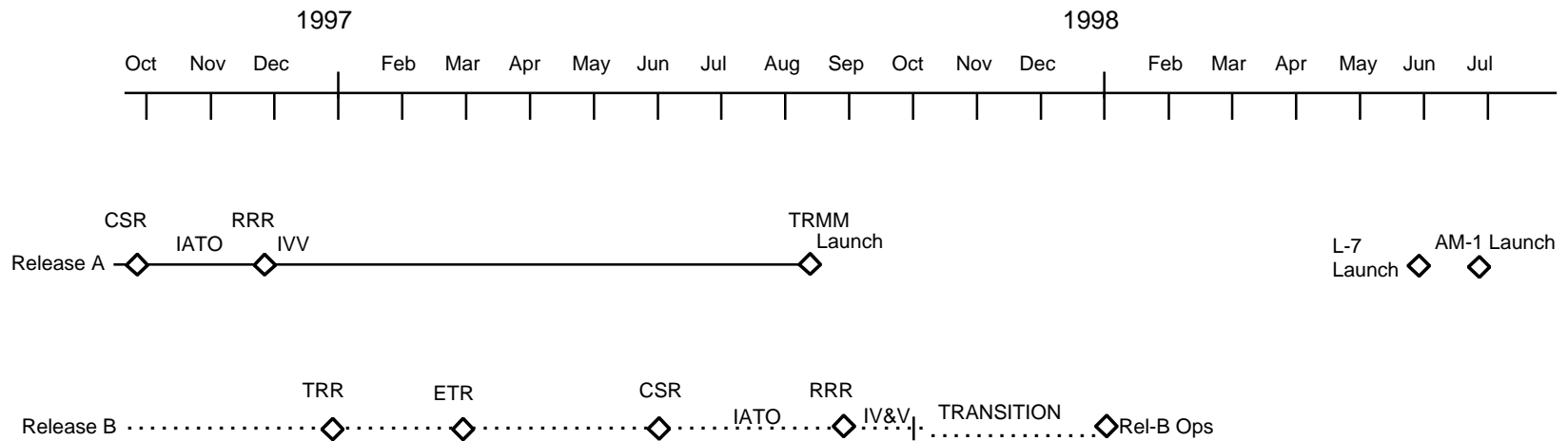
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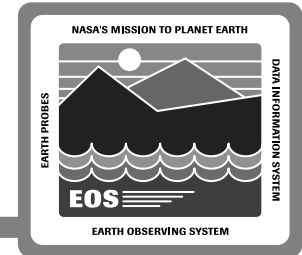**19 January 1996**

Introduction

- **This presentation covers the status of the Transition To B study.**
- **The scope of the study includes all sites where release B is installed, not just release A sites.**
- **Topics to cover:**
  - **Upgrade to DCE version 1.1 for release A**
  - **DCE cell topology**
  - **Mechanisms for transition**
  - **Interoperability between A and B components**
  - **Interoperability between A and B sites**
  - **Site developed software**
  - **Sybase to Illustra migration.**

Transition Timeframe

1997   1998

Oct   Nov   Dec   Feb   Mar   Apr   May   Jun   Jul   Aug   Sep   Oct   Nov   Dec   Feb   Mar   Apr   May   Jun   Jul

CSR   RRR   TRMM
      IATO   IVV   Launch
Release A   L-7   AM-1 Launch
                                                                                                            Launch

TRR   ETR   CSR   RRR
                                        IATO   IV&V   TRANSITION
Release B   Rel-B Ops

Upgrade To DCE Version 1.1

Current situation:

• **release A is developing against OODCE based on DCE 1.0.3**

• **release B will deliver with DCE 1.1**

Release A may deliver against 1.1, may step up to 1.1 via a maintenance release, or may wait until transition to B (release A does not use 1.1 features). Decision will be reached after release A is tested on 1.1.

OODCE will not be upgraded to DCE 1.1 (but will upgrade to 1.2). HP have promised upward compatability, and since we procure DCE separately from OODCE, we will still get significant benefits from the DCE enhancements (hierarchical cells, strong authentication, delegation, performance improvements). If necessary we will make custom enhancements to OODCE for 1.1.

The 1.0.3 to 1.1 prototype is looking at interoperability of 1.0.3 (rel A) clients with 1.1 (rel B) servers.

DCE Cell Topology

- Considering whether to change before or during transition:
  - Either release A becomes multi-cell prior to transition to B, after installation of DCE 1.1
  - Or release A sites transition to B and become multi-cell prior to interacting with other release B sites.

- A wrapper for the DCE Name Service will be developed in release A, to avoid code breakage when cell names change. In release A the site name is part of the intra-cell name, but in release B the site name becomes the cell name.
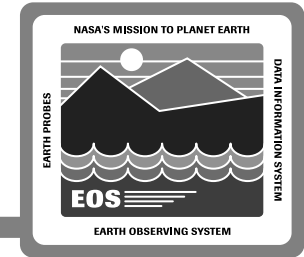
Release A name: /relA/ecs/gsfc/ops/mss/log

Release B name: /gsfc/ecs/ops/mss/log

DCE Cell/Version Transition Approach
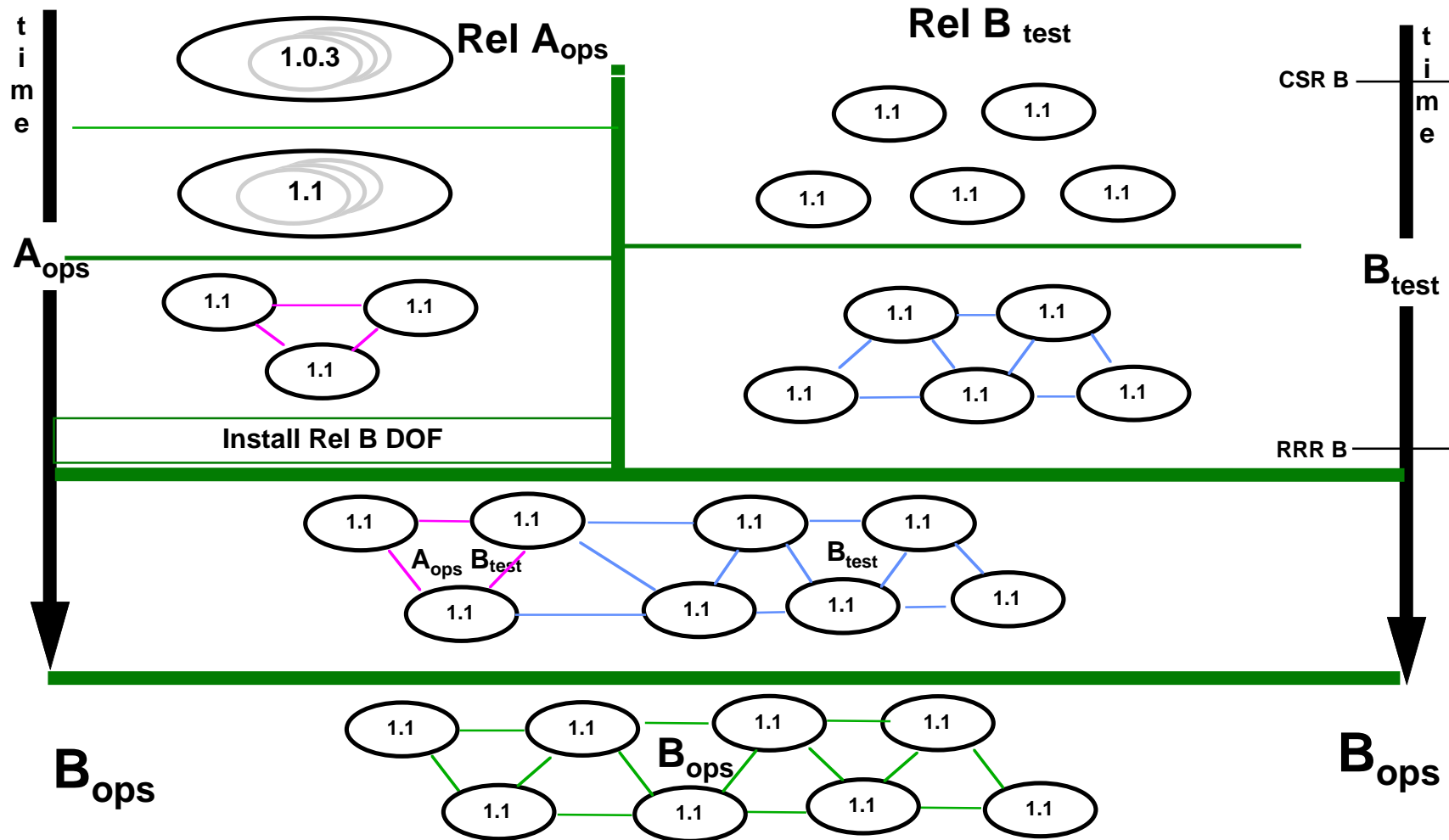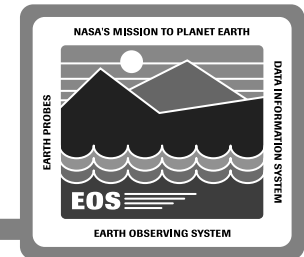
# Mechanisms For Transition

- **Mechanisms include**
    - using mode management to support parallel test and ops.
    - using redundant/release B hardware as a separate test string.
    - using downtime. This is the last resort, but is unavoidable for some changes (eg. DCE upgrade).
    - "wandering DAAC hardware" rejected as inefficient.
- **By CDR, white paper will show a generic transition process for**
    - a release B-only site
    - a release A site.

Interoperability Between A and B Components

• To make transition manageable it must be done piecemeal. Therefore, some release B components will have to interoperate with release A components.

• Example: If Data Server is the first subsystem to transition to B, then it must support existing rel A clients. But then all other release B subsystems would not need to interface with release A data servers.

• Guidance will be given to developers of critical interfaces that release B changes must not break the release A interface.

- methods can be added to objects
- defaulted parameters can be added to methods
- methods and parameters cannot be changed or deleted.

Functional Enhancements And Dependencies
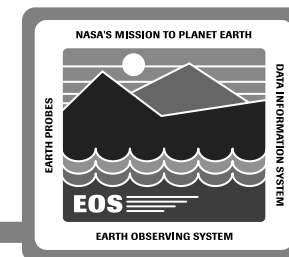
Capability	Dependencies
Mode Management	Needed to support testing during transition at rel A sites
Session Model	Most release B servers depend on this model
DCE 1.1	May be needed for multicell operation at rel A sites. Depends on certain OS versions for each platform.
Multicell Topology	Needed at rel A sites to interoperate with other release B cells
Illustra DBMS for SDSRV holdings, and wrapper	If wrapper's external interface changes, will need corresponding changes in SDSRV
On-Demand Processing requests	Cross-subsystem function involving Client, Data Server, and Planning
Data Acquisition Requests	Cross-subsystem function involving Client and perhaps Aster and ASF gateways
Earth Science Query Language	If different to A, then Data Server, Gateway, and Client (at least) must all step up
LIM, DIM, DDICT	Depend on Data Server to export valids and schema
COTS upgrades	HP/UX, HP Openview, perhaps Sybase
Additional MSS Management Capabilities	Several new COTS packages, eg. Inventory Manager, Logistics Manager, Maintenance Manager
Ingest Planning	Potential use of AUTOSYS for ingest request scheduling and monitoring
Ingest of Documents	Document scanning/digitizing capabilities

Building Blocks

• **Where possible transition will be done on a system-wide function by function basis, to avoid stubbing out interfaces. For example if Client and Data Server support On Demand Processing, then Planning should too.**

• **Transition can be broken into independent functional building blocks, eg.**

- **install mode mgmt**

- **install DCE 1.1 and multicell topology**

- **install new ESQL**

- **install ODPRs, DARs, and ASTER/ASF Gateways**

- **install DIM, LIM, and DDICT.**

Interoperability Between A and B Sites

- **Issues being studied are:**

  - which release B-only site is first to transition?

  - which release A site is first to transition - the closest to the developers, ie. GSFC? The least busy site?

  - what is the order of sites for transition? May be a policy issue, not a technical issue.

- **Dependencies between sites will be analyzed to determine whether any interfaces need to be temporarily stubbed.**

- **Other site issues are:**

  - How will M&O staffing, training, ops procedures, and ops databases be upgraded?

  - How will baseline control be accomplished?

Migration Of Metadata From Sybase To Illustra DBMS

Process to change from Sybase to Illustra DBMS in Science Data Server:

- **install Illustra on redundant DBMS server**

- **test in parallel with production using mode management**

- **use offpeak time to copy data server holdings from production (Sybase) DBMS. Amount of release A data is expected to be less than 1 gigabyte.**

- **Stop production updates, copy any updates that occurred during the copy process, and resume production with fully-populated Illustra DBMS.**

- **To revert to Sybase, just copy back updates that occurred after the switchover.**

Technology exists to maintain both databases in parallel, but the data rates and quantities don't warrant the extra complexity.
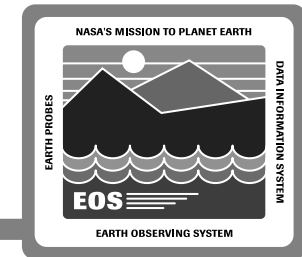
Site-Developed Software

- Guidance on how to avoid code breakage at transition will be given (e.g. don't hardcode cell names). Guidance will be in the transition white paper.

- All site-developed software will be captured and backed up prior to transition.

- IR-1 to A transition will provide experience of what software is developed at sites, and how to transition it across releases.

Summary

- **Trade studies will be performed to decide**
    - **best time to change to multi-cell topology**
    - **best order for component-by-component transition**
    - **best order for site-by-site transition**
    - **which sites are first to transition.**
- **Working group is being formed to address issues.**
- **If your concerns are not being addressed, please provide input.**
- **Draft white paper due 2/29/96; initial version complete by CDR.**
- **Detailed plans for each site will be released in 8/96 version of the paper.**
- **Begin transition 11/97.**

A To B Change Overview - CSMS

Subsystem	Change Description
Sybase	May upgrade from 10.0 to 11.0
HP/UX	Upgrade from 9.0.5 to 10.0
HP OpenView	Upgrade from 3.3 to 4.0
MSS Performance Management	ECS Application Monitoring. Add COTS statistics package for trending.
MSS Fault Management	ECS application event management. Configure Tivoli (from release A) to perform fault correlation.
MSS Security	Configure for multiple DCE Cells
MSS Physical Configuration Management	Configure for additional DAACs
MSS Billing And Accounting	Add Accounting (COTS) package(s) (TBD)
MSS Accountability	Request Tracking
MSS Report Generation	Add COTS package for Report generation (TBD) and custom code
MSS Software Distribution Manager	New for Release B (Will be COTS)
MSS Inventory Manager	New for Release B (Will be COTS)
MSS Logistics Manager	New for Release B (Will be COTS)
MSS Maintenance Manager	New for Release B (Will be COTS)
MSS Training Manager	New for Release B
MSS Policies and Procedures Manager	New for Release B
ISS	No major changes identified; HIPPI over IP - may have to tweak ftp implementations. New: ASTER and ASF communications gateways. DCE 1.1 changes (mostly Admin and Security).

A To B Change Overview - SDPS
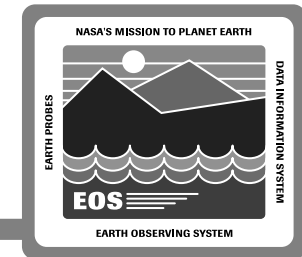
Subsystem	Change Description
Data Server	Inventory Database COTS changes from Sybase to Illustra
	Possible changes to Earth Science Query Language
	On-Demand processing Requests
	Export of valids and schema for DIM, LIM, and DDICT
Ingest	Additional preprocessing (metadata extraction and conversion) for Release B data types
	Potential use of AUTOSYS for ingest request scheduling and monitoring
	Document scanning/digitizing capabilities
Data Processing	Predictive Staging
	Science Software Archive Package GUI Development
	Pre-Processing of Ancillary Data Types (AM-1)
	DAAC QA Enabling
Planning	On-Demand Production Requests
	Inter-DAAC Planning & Production Requests
	Processing Plan Strategies
	Support For Large Reprocessing Jobs
	Generation of Data Availability Schedules
	DAAC-Wide Resource Planning
	Limited Automatic Replan
Client	Replacement of the V0 based ESST with an ECS developed ESST
	User interfaces for Data Acquisition Requests (DARs) and On Demand Processing Requests (ODPRs).
	Common Desktop Environment (CDE) COTS is being considered for the Client.
Data Management	Implementation of DIMs, LIMS, and the DataDictionary.
	COTS is being evaluated for DIMs and LIMs.
	GTWAY impacted by any changes to Earth Science Query Language.
Interoperability	Minimal if any incremental changes.
All Subsystems	Mode management changes, event/error mechanism, session management.